

## A Note from the Executive Director

This CAAFI Quarterly newsletter describes the CAAFI activities and events that occurred in July through September 2017. In case you missed it, the now refurbished CAAFI Quarterly reflects an updated newsletter style and new content sections, which were rolled out earlier this year. We hope you are enjoying the new look!

In this issue, we review the current status of SAJF commercial production. We also explore the efforts currently underway to streamline this process.

We appreciate questions, comments, and suggestions at any time. Enjoy!

*Steve Csonka and the CAAFI Team*

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## Quick Links

⇒ Check out “[What’s New](#)” for a brief review of noteworthy SAJF news from the last quarter, including funding opportunities.

⇒ Go to “[Ask CAAFI](#)”, a new segment that highlights and explains relevant topics that impact the SAJF industry, to read about feedstocks on CAAFI’s radar.

⇒ See “[CAAFI Team Highlights](#)” for a snapshot of CAAFI work teams’ projects and progress last quarter.

⇒ Jump to “[SAJF Deployment Projects](#)” for a summary of select deployment projects around the United States.

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## What’s New?

The U.S. Department of Energy (DOE) [announced the allocation of \\$40 million in awards](#) to DOE Bioenergy Research Centers (BRCs) to advance the development of bioproducts and bioenergy.

The Chemical Catalysis for Bioenergy (ChemCatBio) consortium is offering [funding assistance](#) to industry partners developing catalysts and related technologies to improve the commercialization of biofuels and chemicals by leveraging the resources available at the U.S. Department of Energy National Labs.

Shell and SBI BioEnergy [announced signing a contract](#) giving Shell exclusive development and licensing rights to SBI BioEnergy’s patented carbon negative drop-in biofuel.

Rocky Mountain Institute-Carbon War Room and SkyNRG recently released a [study](#) for the Port of Seattle presenting 14 “co-benefit funding mechanisms,” to support the acquisition of low-carbon fuel at airports.

The South Florida F2F2 [Feasibility Study Report](#) Highlights New Opportunity for Sustainable Fuels Development.

The U.S. Department of Energy (DOE) [MEGA-BIO: Bioproducts to Enable Biofuels Funding Opportunity](#) supports projects to develop biomass-to-hydrocarbon biofuels conversion pathways that can vary their product slate based on market demand and other factors.

The U.S. Environmental Protection Agency (EPA) recently released a [draft analysis](#) of the greenhouse gas (GHG) emissions released from the production and transport of *Beta vulgaris ssp. vulgaris* (sugar beets) when used for the production of biofuels.

The Defense Logistics Agency’s Rocky Mountain/West Coast region solicitation recently resulted in a [supply contract being awarded](#) to AltAir Fuels for an \$86 million acquisition of 60 million gallons of F76 marine diesel with 30% renewable content in FY’18.

The California Energy Commission (CEC) is offering

[grants](#) to eligible research and pre-commercial projects for the production of renewable intermediate biofuel production supporting the jet fuel industry.

The U.S. Department of Energy announced that four additional projects will be funded from the [Productivity Enhanced Algae and Toolkits](#) funding up to \$8.8 million.

CAAFI's Executive Director Emeritus Blogs on [outcomes of the F2F2 project in Fort Pierce, FL](#).

The Department of Transport in the United Kingdom is [offering £22 million](#) to develop alternative jet fuel from waste.

The [Plants Engineered to Replace Oil in Sugarcane and Sweet Sorghum \(PETROSS\)](#) project at the University of Illinois and funded by the Advanced Research Project Agency-Energy (ARPA-E) program has developed lipidcane, which is sugarcane that produces oil instead of sugar.

On November 16-17, 2017, IATA will host an [Alternative Fuel Symposium](#) in Vancouver, Canada that provides a platform for industry professionals to interact and find out about the latest developments and insights from leaders in the market.

[Enerkem](#) has been producing and selling biomethanol since 2016 from its facility in Edmonton, Canada and now, with the installation of its methanol-to-ethanol conversion unit earlier this year, has become the first facility in the world to produce cellulosic ethanol from mixed municipal solid waste (MSW) on a commercial-scale.

[British Airways](#) has partnered with [Velocys](#), a renewable fuels company, to design a series of municipal solid waste (MSW) to jet fuel facilities in order to fulfill their commitment to reduce net emissions by 50 percent by 2050.

The U.S. Department of Agriculture (USDA) National Institute of Food and Agriculture (NIFA) announced [six awards totaling \\$21.6 million through the Agriculture and Food Research Initiative \(AFRI\)](#), two of which support the development of alternative jet fuel (AJF), biobased products and biomaterials from renewable sources.

*Additional information on these news items and additional funding opportunities can be found at [caafi.org](#).*

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## Ask CAAFI

**Question:** What is the current status of SAJF commercial production?

**Answer:** CAAFI is currently aware of 13 offtake agreements with approved pathways, providing evidence that airlines are ready to invest in biofuels. The aviation industry consumed more than 1.1 million gallons of SAJF in the U.S. last year, and based on these agreements, CAAFI anticipates additional growth from other companies that have announced plans to produce up to 260 million gallons per year. The remaining offtake agreements are detailed [here](#).

AltAir is currently the only company producing SAJF in the U.S. and anticipates expanding its non-edible lipid-based fuel production 4-5 times current production over the next few years. Significant lipid-based fuel production plans from now to 2025 will require substantial scale-up of oilseed production, which will be a challenge. However, CAAFI is working with ASCENT and other researchers to better understand competition for those feedstock resources and commercial processes, risk-sharing across the supply chain, HEFA-SPK process advancement, and other aspects of supply chain development.

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## CAAFI Team Highlights

### Business —

- ⇒ Continued to expand work with prospective alternative fuel producers and airlines to facilitate opportunities for airline and other end user engagement, identifying supply logistics needs and informing contract processes.
- ⇒ CAAFI leadership continue to work with several firms approaching commercialization, including SG Preston, Shell, ARA (and several of its licensees), NuFuels, LanzaTech, and others.

### Certification/Qualification —

- ⇒ ATJ Ethanol: LanzaTech submitted an updated research report to the OEMs on September 18

for Step 7 review. The research report and the Annex A5 revision to add ethanol as a feedstock will be balloted to the ASTM membership concurrently with the OEM review in late October. If the ballot progresses without any negatives, the new Annex A5 with ethanol will be issued early next year.

- ⇒ HFP-HEFA (Green Diesel): The OEMs have completed their review of the Phase 1 version of the research report. The submitted comments require additional fit-for-purpose testing and rig testing (combustor, fuel nozzle spray, APU cold/altitude starting). There were also several comments regarding the maximum blend percentage. The FAA will collaborate with the OEMs to conduct the required rig testing under the CLEEN 2 R & D program. With expedited testing, approval is still possible in 2018.
- ⇒ ARA CHJ: ARA is working to update their research report with the results from the U.S. Navy engine test.
- ⇒ Refinery Co-processing: The second ballot received 4 negatives from the bio-diesel industry. These negatives will be reviewed at the December meeting in Houston, TX.

### Sustainability —

- ⇒ Working to draft an expansion of the “[Environmental Sustainability Overview](#)” to include social and economic sustainability and developing new content for [caafi.org](http://caafi.org).

### R&D —

- ⇒ Evaluated and discussed information on current challenges that emerged from conversations with 12 companies that are pursuing emerging pathway technologies.
- ⇒ Updated their work plan for the next year and reviewed team mission statement.
- ⇒ Posted the latest white paper, [Transportation Challenges Associated with Alternative Jet Fuel Distribution](#).
- ⇒ The next SOAP-Jet webinar will be (was) conducted on October 13th. Dr. Kimberly Ogden and Dr. David Wright will present, [Introducing New USDA NIFA AFRI CAP Grant Awardees Developing Regional AJF Supply Chains](#).

## SAJF Deployment Projects

### Appalachian Region:

#### ◇ Southwest Virginia —

- The VA F2F2 team met in Richmond, VA in mid-Sept to review and discuss multiple program options based on a concept paper on the development of woody biomass-based process options. The areas of interest was extended to include areas north of Richmond in addition to SW VA Appalachian region.
- The University of Tennessee Knoxville (UTK) submitted a Biomass Research and Development Initiative (BRDI) concept paper that led to the submittal of a full proposal in late September by a broad team including UTK and VA F2F2 teams. This effort represents the first successful F2F2 and ASCENT collaboration. Feedback from UTK indicates that the proposal successfully brought in letters of support from United, FedEx, and a broad array of private and public sector leadership that greatly enhanced the effort. While success is not guaranteed, it is hoped that this approach will set the stage for other similar efforts with ASCENT regional partners and F2F2 state efforts.
- The Center for Natural Capital is planning to submit a proposal to the Appalachian Regional Commission (ARC) by 10/19 for an effort for project site selection in SW Virginia. CAAFI is engaged in a minor role in the proposed effort. Meetings were held in St. Paul, VA with the Cumberland Planning District and Wise County, VA with lumber processing interests at Mountaintop (a wood residual processor) that supported the development of the proposal. This effort is the first formal joint ARC/F2F2 proposal.

#### ◇ Virginia — Other efforts in VA include:

- Potential support from “Go Virginia” a state-wide effort run by the Commerce Department that requires targeted activities within a planning district.
- Center for Innovative Technology (CIT) grant applications are expected during the 4<sup>th</sup> quarter of 2017. CIT has previously funded CCALS /UVA and issued support letters for the SW VA BRDI application, and could be a cost share source for a Value Added Producer Grant.
- The Center for Natural Capital is expected to apply for a Forest Service Wood Innovation Grant by year-end. Support from the Virginia Forest Service is expected due to VA hardwood forests growing 3 to 4 times faster than they are being harvested.

#### **Farm-to-Fly 2.0 (F2F2) highlights:**

◇ **South Florida** – Implementation of processing steps at a citrus facility were completed. Test results from the St. Lucie County Tropicana facility were issued. Contract work was completed in the second quarter and a final report was issued in the third quarter. In addition, communications included county and CAAFI [news](#) postings, a CAAFI [blog](#) supporting the effort and proposing its organization as a F2F2 te(a)mplate was issued was published, and local TV [report](#) was produced. As a result, discussions have been initiated to pursue a scale-up effort at the shuttered Peace River citrus processing plant and are also possible in St. Lucie County surrounding either the Tropicana facility or other processors.

◇ **North Florida** –The University of Florida was announced as an awardee of USDA NIFA AFRI Coordinated Agricultural Project (CAP) grant, named the [Southeast Partnership for Advanced Renewables from Carinata \(SPARC\)](#).

Rich Altman, CAAFI’s Executive Director Emeritus, is leading the project’s supply chain development efforts. Agrisoma and ARA are other core members of the team that lead the modeling team’s efforts. CAAFI’s Executive Director, Steve Csonka, serves as Chair of the Advisory team for this program.

The team produced a 6 month work plan for developing a southeast specific supply chain with implementation expected to be initiated in the fourth quarter in the multistate region including Georgia, Alabama and Florida.

A dialogue was initiated with Florida Wildlife Federation, an environmental NGO, and Florida state government to gain access to the incentives available if carinata is used as a cover crop to prevent nitrogen and phosphorus runoff that is decreasing water quality to provide significant added value by limiting water pollution into the Gulf of Mexico.

◇ **Vermont** –Developed specific work statements to develop the commercial plans required by the Value Added Producer Grant (VAPG) for fuel, fertilizer, feed and potable drinking water product opportunities. These will be completed by the end of the first quarter and support subsequent scale up of the candidate process producing fuel, granular fertilizer (for corn), potential animal feed and potable drinking water for cows.

In addition to the process specific discussions in Vermont, UVM has agreed in principle to support a broader effort in the northeast in conjunction with dairy industry representatives Newtrient and its university technical board participant Cornell (see below).

**Regional, Industry Sector Efforts and Cross Project Government Coordination:** The following efforts reached beyond state borders and are expected to expand in the months ahead.

◇ **Meetings with Florida State Government Officials** – Transcending the Florida projects is the desire by state officials to ensure that the projects in FL achieve commercial development.

Meetings were held in Tallahassee with the FL Department of Agriculture to go through strategies that could be applied to both regions and allow FL to compete absent favorable policies, such as the California Air Resources Board (CARB). These

meetings solidified the SPARC Supply chain mission as building a SE commercial presence for sustainable aviation fuels.

◇ **Dairy Industry Work with Newtrient, University Board Members and UVM** – Discussions initiated in the spring are being renewed during the fourth quarter and potentially could produce joint cooperative proposals targeting dairy waste opportunities during the course of 2018.

◇ **Appalachian Regional Expansion** — It is expected that the southeast woody biomass commercialization efforts, if successful in VA with the ARC/CAAFI efforts, will serve as a template for other ARC efforts in communities with similar wood resources.

It is also planned to seek overlap between the SPARC effort and ARC counties in the SE, primarily in Alabama.

◇ **Application of Analytical Tools across Regions and Projects** – Each CAAFI State and Regional initiative on the east coast is now being examined to aid in the assessment of state and regional opportunities

Tools under consideration for use in the projects above include:

- Freight and Fuel Transportation Optimization Tool (FTOT) – distribution evaluation models first assembled by Volpe/U.S. DOT to aid policy decision making.
- Systems Resiliency Assessment evaluation using an evaluation template developed by VA F2F2 partner UVA under NSF contract.
- Advanced Techno-Economic Analysis (TEA) tools being developed by Purdue University in conjunction with the ASCENT Center of Excellence.

*If you are aware of other scenarios that could be appropriate for a regional development effort, please let us know. For more information, see [CAAFI's State Initiatives](#) page.*

*Please check the [CAAFI website](#) on a regular basis for more detail on pending activities.*

*Email [peter.herzig@dot.gov](mailto:peter.herzig@dot.gov) with any ideas for CAAFI Quarterly items of interest, [caafi.org](http://caafi.org) news suggestions, or inquiries about subscription to the CAAFI Membership group.*